

# NEW PROJECT REQUEST FORM

## ES&H PROJECTS

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For Data Reference Use Only

a. Facility Code

b. ADS Number

### Activity Data Sheet (ADS) Identification Section

3. ADS Title: Passive Groundwater protection at AGS for RSVP experiments

3a. ADS Area: (Select 1 only) ☒ ES&H ☐ Equally ES&H and Infrastructure or Program

4. Data Sheet Status Code: (Select 1 only) ☒ Open ☐ Closed ☐ Hold ☐ Discontinued ☐ Void

13. Contractor Division

17. DOE Manager D Kovar

14. Contr. Department

18. DOE Phone

CAD

Champion Email

15. Contractor Manager

pendzick@bnl.gov

16. Contractor Phone

Champion Pager

### ES&H ADS Functional Areas

20. ES&H Functional Area Breakdown (Attach additional pages if necessary)

See Web Site: <http://epweb.pe.bnl.gov/infrastructure/projects/projects.htm> for listing

Functional Area	Sub-Area	% Total Cost
CW	01	100

Percentage of costs attributable to:

21. Training:

22. Maintenance

### ADS Type Section

23. ADS Type: (Select 1 only) ☐ Core ☒ Compliance ☒ Improvement

24. Drivers (Attach additional pages as necessary)

See Web Site: <http://epweb.pe.bnl.gov/infrastructure/projects/projects.htm> for listing

Driver Type	Driver Code	Primary? (Just one)	Driver Title
			Safe drinking water act

25. Compliance Comments

(Attach additional pages as necessary)

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### 26. ADS Description/Objective (Attach additional pages as necessary)

Provide a description of the activity. Include sufficient detail to allow a reader not previously knowledgeable of the activity to understand the activity's scope and what it is intended to accomplish.

The RSVP experiments are a major new initiative funded by the National Science Foundation to utilize an AGS upgraded to 100 Tera Protons (TP) per beam spill. One of the RSVP experiments, "MECO", will utilize both the increased intensity and a faster cycle time for the AGS, producing 40 TP per second for their experiment. This will be the most intense high energy proton beam in the world. The present cost estimate for these experiments is over 100 M dollars, with a construction start scheduled for FY 2006.

There is a potential with the greatly increased number of protons being accelerated in the AGS complex for small beam losses to irradiate soil used as shielding making sodium-22 and tritium, rain water percolating through this soil could then carry this radioactivity to Long Island's groundwater. Active protection systems, such as alarming beam-loss monitors, are currently used to limit the duration of these potential events. A passive system such as a rainwater barrier offers defense-in-depth and greater protection against the more intense beams to be used in the future.

Presently, the Standard Based Management System (SBMS) requires that all identified beam losses that result in rain water 5% above the allowable drinking water standard for radioactivity be re-mediated by various means. One effective solution used in the past at the g-2 experiment beam stop, the E-10 area of AGS and the old neutrino beam dump was to place an impermeable rainwater barrier over the irradiated soil, thereby preventing water from percolating through. The rain water barrier chosen was a function of the physical limitations of the site, in the past, a landfill type EDPM cap or concrete barrier was used.

This project would identify all areas in the AGS complex where there is a potential for soil activation and to install impermeable rainwater barriers over these areas. We suggest a graded approach, where the areas of greatest potential be re-mediated first, with the goal of having all these areas protected by the first running of the RSVP experiments in approximately FY 08.

Completion of this project would eliminate the delivery from AGS operations of any radioactive water to Long Island's groundwater through the percolation process; that is, areas that produce less than the 5% limit will also be capped. This pro-active approach, which was used at the NSRL facility, will increase the confidence of our stakeholders that BNL is serious about protecting the environment while advocating world class science.

### 27. ADS Appraisal/Justification (Attach additional pages as necessary)

Describe the risks/impact of not implementing or not continuing this activity and opportunities related to this activity. Discuss risks/benefits, if applicable, for Public Safety & Health, Site Personnel Safety & Health, Compliance, Mission Impact, Cost-effective Risk Management, and Environmental Impact. Describe any other significant impacts or considerations (e.g., cost avoidances, payback periods, etc.)

#### Benefit

By installing rainwater caps on all areas of AGS where possible radioactive contamination of ground water may occur, BNL will demonstrate its desire to take a pro-active approach in preventing any degree of radioactive contamination of groundwater to our constituents and to our fellow employees. Discovery of a new plume of radioactive groundwater, without a strong plan to eliminate all such plumes from AGS, will erode our stake holders

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confidence in our sincerity to protect the environment and risk the loss of a major new scientific initiative by the National Science Foundation.

This project will:

Eliminate the addition of radioactivity to Long Island's groundwater through the percolation process from AGS operations.

Eliminate the high costs of monitoring and re-mediation of a radioactive plume.

Eliminate the damage done to our public image if another radioactive plume is discovered.

Increase the public confidence that BNL is taking a pro-active approach to protecting the environment.

Decrease the risk of losing a major new experimental program funded by the National Science Foundation.

### Risk/Vulnerability

BNL takes the risk of discovery of a new radioactive plume without a strong program to completely eliminate such plumes, the cost of monitoring, re-mediation, damage done to our public image, and the possible loss of an exciting new experimental program by the National Science Foundation.

### Mitigating Actions

AGS has taken action when a radioactive plume is discovered and installed a waterproof barrier. These barriers have been installed at the E-10 area of AGS, the g-2 beam stop and the old neutrino beam dump. It has identified possible high loss points at the J-10 beam dump and installed a waterproof barrier and is in the process of design engineering a cap for the LINAC beam dump area. The H-10 area of AGS has possibly three separate problems, a leaking domestic water line under the area has been secured, re-mediation of a storm water line with standing water is in process, and beam loss patterns in this area are close to limits. This "piece-meal" approach is not cost effective & time consuming due to the fact that the work must be done during machine shutdown periods.

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### 37. Resource Structure Code (RSC): *(Check One)*

___	LIN	Line Item - Infrastructure	___	GPP/LL	GPP - Landlord (Site GPP Fund)
___	LIE	Line Item - ES&H	___	GPP/KA	GPP - High Energy Physics Specific
___	AIP/KA	AIP - High Energy Physics Specific	<u>  x  </u>	GPP/KB	GPP - Nuclear Physics Specific
___	AIP/KB	AIP - Nuclear Physics Specific	___	GPP/KC	GPP - Basic Energy Sciences Specific
___	AIP/KC	AIP - BES Specific (Former ARAM )	___	GPP/KP	GPP - OBER Specific
___	OPER	Operating Funds - Special Maintenance or ES&H Program Support			
___	OPER/XX Department / Division Operating Funds ( xx - 2 Digit Dept / Div. Code)				

**(Note: If the ADS is funded from an allocable cost pool, provide B&R makeup.)**

### 42. Activity Cost Estimate (x \$1,000)

### 43. FTE Requirements

For departmental funded projects indicate cost expectations by FY. For all other projects place project total cost in the unfunded field.

Fiscal Year	Estimated Implementation Costs in \$1,000				% ESH	FTEs (to two decimals)	
	Operating Expense (OE)	Capital Equipment (CE)	General Plant Project (GPP)	Line Item Project (LIP)		Federal	Contractor
Prior Year (PY) <u>1999</u>							
Current Year (CY) <u>2000</u>							
Budget Year (BY) <u>2001</u>				68			
BY + 1 <u>2002</u>				518			
BY + 2 <u>2003</u>				518			
BY + 3 <u>2004</u>				518			
BY + 4 <u>2005</u>				450			
Unfunded* <u>2006</u>							

\* For Compliance activities with costs beyond BY + 4, enter total estimated cost to complete in the Unfunded row.

### 45. Cost Estimate Notes: (Provide information on estimate, source and date of estimate, if from an ILR give number, and whether or not engineering, project management, contingency and burden is included. )

Costs were estimated on the average cost per sq. yd. for EDPM barriers applied so far at AGS. Average cost per cu yd of concrete cap was used in areas where excavation was impractical. It was assumed that all areas that do not presently have a cap will be covered. No credit was taken for the soil-crete over certain areas of the AGS being an impermeable barrier. All costs are direct, with contingency and engineering but no project management. Costs were spread out over many fiscal years to match AGS shutdowns.

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## Minimum Required Information for ESH Activity Data Sheets

The fields which have not been redlined on the ADS above are mandatory fields which must be completed following the instructions below. If information is known and you wish to utilize a redlined field, please input your data for transcription to the main database.

3. Provide a concise and descriptive project title.
- 3a. Indicate that this is an ESH ADS
13. Provide two letter Department/Division Code.
15. Provide name of the project champion for the activity.
16. Phone number of project champion.
17. Provide name of DOE-BHG counterpart manager for the activity.
18. Phone number of DOE-BHG counterpart.
20. Functional area addressed and percentage of each if more than one (i.e. radiation protection, industrial safety, environmental protection, etc.). Please note that percentages of functional areas addressed must equal 100%.
23. Indicate ADS type (Core, Compliance, Improvement, Other).
24. If compliance is chosen, a regulatory driver or DOE Order must be provided. If choice is not available in the draw down list, select other and provide specific driver in #25.
25. If compliance, discuss nature of current non-compliance briefly.
26. This section should be introduced by a summary of the proposed action and the issue being addressed not to exceed six typed lines. The summary should then be followed by a detailed description of the proposed activity and the issues to be addressed.
27. This section should be introduced by bullets which succinctly discuss the benefits of completing the proposed activity. This should also not exceed six typed lines. Following the bullets should be a discussion of the current risks, how the proposal will alleviate the risk and a separate discussion of ways that the risk will be mitigated until the proposal is funded, provided mitigative measures can be employed.
37. Provide the anticipated funding source for this activity from the table provided.
44. Insert into the table the anticipated costs associated with the project and the appropriate column related to where funding would be anticipated from. Program funded activities

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(i.e. KA, KB, KC) should be placed into the GPP column. All operating funded activities including department/division supported and special maintenance activities should be placed in the OE column. Any project that is currently unfunded pending a decision to be made outside of your organization should be placed in the year 2005 at this time.

45. A statement or supporting information should be provided on how the estimate was arrived at. It should also be indicated as to whether the activity could be phase funded over two or more years or if circumstances require completion within the same fiscal year.